SAMPLING PLAN

JEFFERSON PROCESSING SITE — TDD: S05-0002-008
MINGO JUNCTION, JEFFERSON COUNTY, OHIO — EPA CONTRACT: 68-W6-0011

1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) Region V, On-Scene Coordinator (OSC) Thomas Cook directed the Ecology and Environment, Inc. (E & E), Superfund Technical Assessment and Response Team (START) to develop an extent of contamination (i.e., soil, slag, sediment, and stream water) sampling plan for the Jefferson Processing Site (Site) in Mingo Junction, Jefferson County, Ohio.

2.0 SITE DESCRIPTION

2.1 Location and Description

The Jefferson Processing Site (Site) is located on County Road 74 (Gould Road), Mingo Junction, Jefferson County, Ohio. The geographical coordinates for the Site are latitude 40°18'40"N and longitude 81°40'22"W (Attachment A). According to the Ohio Environmental Protection Agency (EPA) the property consists of approximately 320 acres located four miles south of Steubenville, Ohio on the flood plain of Cross Creek. The Site is situated in a mixed rural and industrial area. According to background information, the Site encompasses approximately 61 acres of this property including the following structures: two large furnace/processing buildings (Buildings J1 and J2), an electrical substation (SS), a pump building (Pumphouse; PH), cooling towers, and a laboratory/ office building. Several settling ponds and numerous uncovered slag and baghouse (dust) waste piles surround these structures. The Site is bordered on the east and south sides by Cross Creek along Gould Road and on the west side by Cross Creek along Sheeprock Road. The Site is bordered to the north and west by forested land.

The Site includes a total of 18 transformers of various sizes with polychlorinated biphenyl (PCB)-containing oil located in Buildings J1 and J2, the Pumphouse, and the electrical substation (outside). Nine of the transformers are located in Building J1 (J1-A through J1-I), three transformers are located outside (to the southwest of Building J1) in the Substation (SS-J through SS-L), one transformer is located in the Pumphouse (PH-M), and five transformers are located in Building J2 (J2-N through J2-R). One hundred fifty-nine (159) General Electric (GE) capacitors are located in a locked stockroom / repair shop at the southern end (ground floor) of Building J1.

2.2 Background

In 1958, Vanadium Corporation of America (Vanadium) established the 36-acre ferro-alloys production facility. In the 1960s, Vanadium merged with Foote Mineral Company (Foote). Foote then sold the production facility to Satralloy, Inc. (Satralloy) in the mid-1970s. Vanadium, Foote, and Satralloy used chrome ore to manufacture ferrochrome. Several violations were noted by the Ohio EPA during a PCB Compliance Inspection at the facility in 1988. The findings of this inspection led to a Consent Agreement and Final Orders which were issued to Satralloy, Inc. in 1990. In June 1994, Catherine Glorious purchased the facility and property at a sheriff's auction. After June 1994, approximately 75,000 tons of chrome ore were removed from the Site, and the high-carbon slag stockpiled on site was crushed and screened for resale as a road aggregate by Argo Sales Company, Inc.

On May 12, 1997, the Ohio EPA conducted a PCB Compliance Inspection to document the facility's handling, storage, and disposal practices and to determine its compliance with the Federal PCB Regulations, 40 CFR Part 761. The Ohio EPA identified seven General Electric (GE) transformers during the inspection in 1997 and issued a citation for violations which were observed. On August 11, 1999, START personnel conducted a site assessment under the direction of U.S. EPA OSC Karla Auker. Laboratory analyses conducted on five oil residue samples collected from around the base of transformers at the Site indicated the presence of low and high concentrations of PCBs on site.

3.0 PROJECT DESCRIPTION

3.1 Objective

The objectives of this sampling assessment are (1) to determine if heavy metals and PCBs are present in the soils and stockpiles of the Site in quantities that may pose a health hazard and (2) to determine if the suspected contaminants have migrated from the property into the stream sediment and water of the adjacent McIntyre Creek and Cross Creek.

3.2 Scope of Work

The scope of work is as follows:

A. *Surface soil samples (stream banks)*: Soil samples will be collected from five discrete locations along the banks of McIntyre Creek and Cross Creek at an average depth of 0-3 inches below ground surface (b.g.s.).

B. *Surface sediment samples*: Sediment samples will be collected from the same five locations as the surface soil samples; however, they will be

collected from the stream bottom at an average depth of 0-3 inches of sediment.

C. *Stream water samples*: Water samples will be collected from the same five locations as the surface soil and sediment samples.

D. *Surface soil samples (Substation)*: Soil samples will be collected as a composite of eight points directly under the eight cooling fins of transformers SS-J and SS-K at the Substation (0-3 inches b.g.s.).

E. *Stockpile slag samples*: Slag samples will be collected as a composite of five points for each of three stockpiles surrounding Buildings J1 and J2 (0-3 inches b.g.s.).

The following table identifies the proposed sampling locations and their matrices:

Table 1. Sample locations

Sample Identifier	Matrix	Type of Sample	Location
MC-SL-01 CC-SL- 01 through 04	Soil (SL)	Surface Grab	Five discrete locations along the banks of McIntyre Creek (MC) and Cross Creek (CC) at an average depth of 0-3 inches b.g.s.
MC-SD-01 CC-SD- 01 through 04	Sediment (SD)	Surface Grab	Same locations as above; however, collected from stream bottom at an average depth of 0-3 inches of sediment
MC-WA-01 CC-WA- 01 through 04	Water (WA)	Grab	Same locations as above except collected from stream water
SS-SL-J/K	Soil (SL)	Surface, 8-Point Composite	Composite of soil from eight points directly under the eight cooling fins of transformers SS-J and SS-K at the Substation
J1-SP-01 J2-SP- 01 through 02	Stockpile Slag (SP)	Surface, 5-Point Composite	Composite of slag from five points for each of three stockpiles surrounding Buildings J1 and J2

3.3 Data Use

The data obtained from this sampling assessment will be used to determine if heavy metals and PCBs are present in sufficient quantities in the soils and stockpiles of the Site to present an imminent and substantial threat to public health and welfare and to determine if such contaminants have migrated towards McIntyre Creek and Cross Creek by way of drainage pathways.

4.0 SAMPLING PROCEDURES

4.1 Sample Collection

All sampling activities will be performed using the level of personal protective equipment (PPE) which is described in the Health and Safety Plan (HASP) for this sampling event. Sample collection methods are listed below according to their matrix.

4.1.1 Surface Soil Samples

All surface soil sampling procedures will follow the *Compendium of ERT Soil Sampling and Surface Geophysics Procedures*, Standard Operating Procedure (SOP) #2012, Surface Soil Sampling.

4.1.2 Surface Sediment Samples

All surface sediment sampling procedures will follow the *Compendium of ERT Surface Water and Sediment Sampling Procedures*, SOP #2016, Sediment Sampling.

4.1.3 Stream Water Samples

All stream water sampling procedures will follow the *Compendium of ERT Surface Water and Sediment Sampling Procedures*, SOP #2013, Surface Water Sampling.

4.2 Sample and Equipment Decontamination

Sample and equipment decontamination procedures will follow the Compendium of ERT, SOP #2006, Sampling Equipment Decontamination. All sample containers will be decontaminated by wiping the outside of each container with a dry paper towel. This dry decontamination procedure should be sufficient to remove any gross contamination.

The sampling equipment to be utilized for all sampling operations will be dedicated and disposable with the exception of the stainless steel spoons and bowls used for the collection and compositing of soil, sediment, and slag samples collected for PCB analyses. The stainless steel spoons and bowls will be decontaminated between samples using distilled water and Alconox to wash and distilled water to rinse. Contaminated PPE and disposable sampling equipment will be bagged and disposed as dry industrial waste.

5.0 ANALYTICAL PARAMETERS

All surface soil, sediment, and slag samples will be analyzed for TCLP metals, Target Analyte List (TAL) metals, and PCBs. Additionally, the stream water samples will be analyzed for TAL metals and PCBs. The TCLP metals analysis will be performed according to EPA SW-846 Methods 1311-6010/7000 for the soil, sediment, and slag samples. The TAL metals analysis will be performed according to EPA SW-846 Method 6010 for the soil, sediment, slag, and water samples. The PCB analysis will be performed according to EPA SW-846 Method 8082 for the soil, sediment, slag, and water samples.

Listed below are the laboratory analyses requested by matrix and the respective sampling containers, preservatives, and analytical methods.

Table 2. Summary of Analytical Parameters

Sample Location	Matrix	Analytical Parameter	Test Method (EPA SW-846)	Containers and Preservatives Used
McIntyre Creek and Cross Creek	Soil and Sediment	TCLP Metals	1311-6010/7000	16-oz. CWM
		TAL Metals	6010	8-oz. CWM
		PCBs	8082	8-oz. CWM
	Water	TAL Metals	6010	1-L Poly HNO_3 (pH <2)
		PCBs	8082	2 x 1-L AGJ, 4°C
Substation Transformers (SS-J and SS-K)	Soil	TCLP Metals	1311-6010/7000	16-oz. CWM
		TAL Metals	6010	8-oz. CWM
		PCBs	8082	8-oz. CWM
J1 and J2 Stockpiles	Slag	TCLP Metals	1311-6010/7000	16-oz. CWM
		TAL Metals	6010	8-oz. CWM
		PCBs	8082	8-oz. CWM

6.0 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) PROCEDURES

This sampling plan is designed to satisfy the QA/QC Guidance for Removal Activities (EPA/540/G-90/004, April 1990) QA Level 2 criteria.

6.1 Quality Control of Field Activities

The START Project Manager will be responsible for ensuring that sample quality and integrity are maintained in accordance with the QA/QC Guidance for Removal Activities (EPA/540/G-90/004, April 1990) and that the sample labeling and documentation are performed as described in Section 6.2 of this sampling plan.

6.2 Sample Packaging and Storage

Sample containers will be labeled and shipped with a sample tag affixed to each container. Samples will be placed in plastic zipping bags. Bagged containers will be placed in appropriate transport containers and the containers will be packed with appropriate packaging material and preserved with ice, if necessary. All sample documents will be affixed to the underside of each transport container lid. The lid will be sealed with shipping tape and custody seals will be affixed to the transport container. Transport containers will be labeled with the origin and destination locations.

Regulations for packaging, marking, labeling, and shipping of hazardous materials and wastes are promulgated by the U.S. Department of Transportation (DOT). Air carriers which transport hazardous materials, in particular, Federal Express, require compliance with the current International Air Transport Association (IATA) Regulations, which applies to the shipment and transport of hazardous materials by air carrier. START will follow IATA regulations to ensure compliance.

6.3 Field QC

Field QC will consist of documentation which indicates sample locations and descriptions as shown in the Site logbook and sampling field notes.

6.4 Laboratory QC

Laboratory QC will consist of the data reporting requirements as outlined in the Statement of Work (Appendix C) of the ERRS Invitation for Bid No. 41637-04.

8.0 REFERENCES

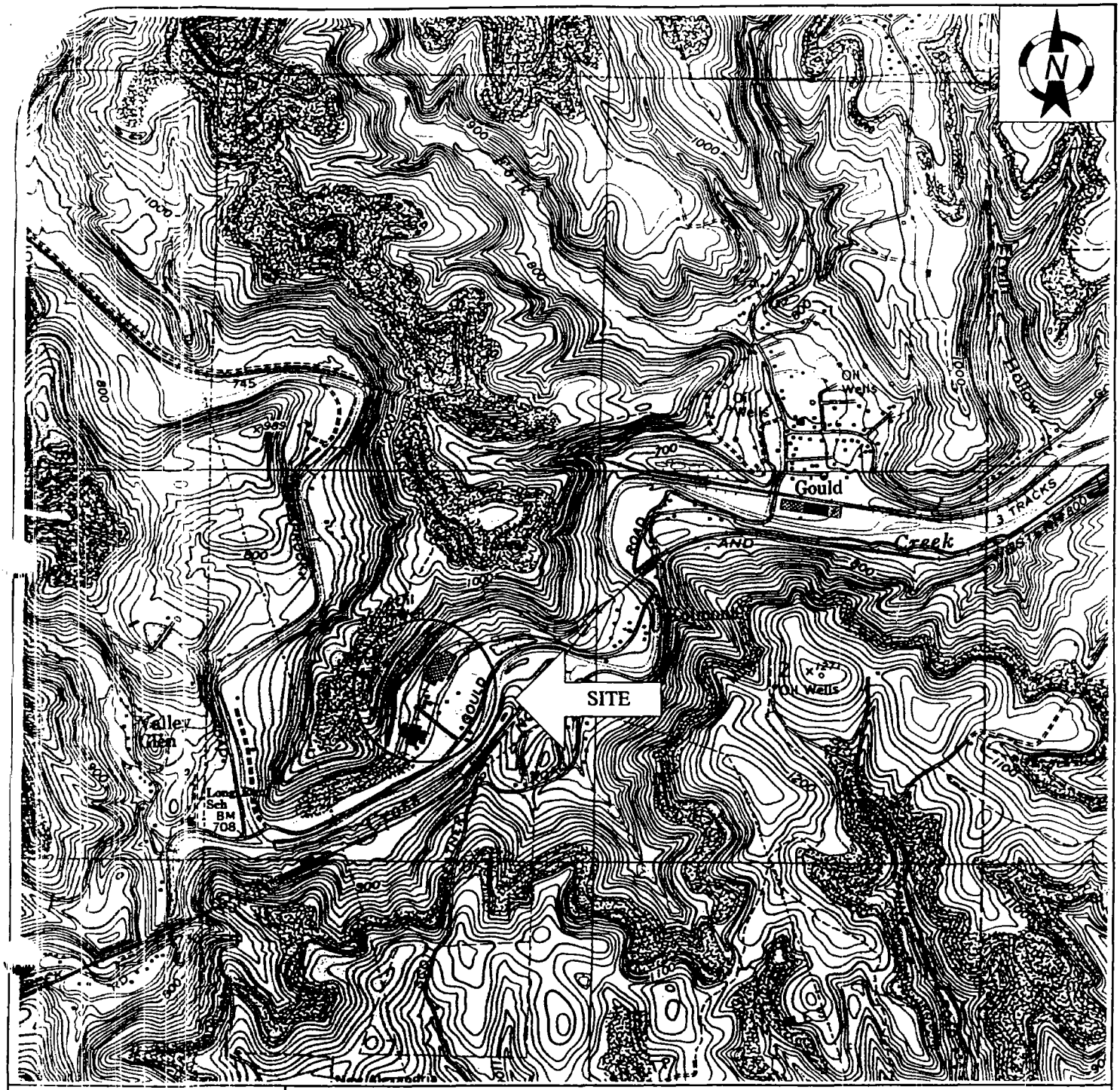
U S. Environmental Protection Agency. 1991. *Compendium of ERT Soil Sampling and Surface Geophysics Procedures*. EPA/540/P-91/006. Washington, D.C.

U S. Environmental Protection Agency. 1991. *Compendium of ERT Surface Water and Sediment Sampling Procedures*. EPA/540/P-91/005. Washington, D.C.

U S. Geological Survey. 1968; Photorevised 1985. Steubenville West Quadrangle, Ohio-West Virginia. (7.5-minute series topographic map).

ATTACHMENT A

SITE LOCATION MAP



Quadrangle Location

Ecology and Environment, Inc.
Region 5 - Superfund Technical Assessment and Response Team
6777 Engle Road, Suite N
Middleburg Heights, Ohio 44130

TITLE:	Site Location Map	FIGURE:	A
SITE:	Jefferson Processing Site	SCALE:	1:24,000
CITY:	Mingo Junction STATE: Ohio	TDD:	S05-9903-008
SOURCE:	USGS Topographic Map 7.5' Series Steubenville West Quadrangle Ohio-West Virginia	DATE:	1968
		REVISED:	1985

8/28/00 SAMPLING LOCATIONS:

Roll #2 (START w/ #12) 1400 ① MC-SL-Ø1 (SOIL) - Long Run School at McIntyre Creek
MC-SD-Ø1 (SED) [LDB/north bank at base of stairs]
MC-WA-Ø1 (WATER)

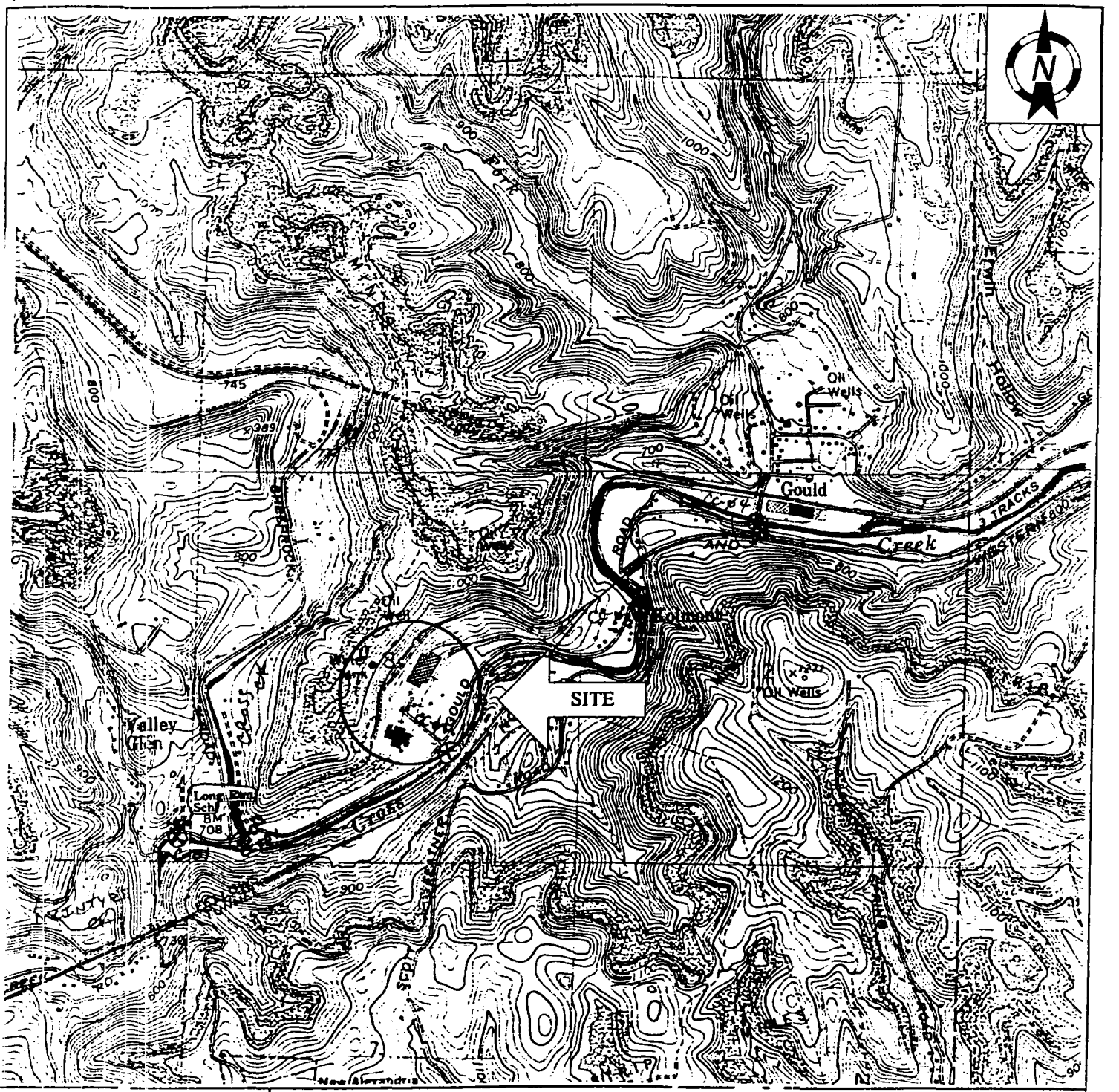
Photos 8/28/00
#13+#14 1530 ② CC-SL-Ø1 (SOIL) - Cross Creek at Goulds Rd. bridge intersection
CC-SD-Ø1 (SED) with Sheep Rock Rd. (before confluence w/ McI. Ck.)
CC-WA-Ø1 (WATER) [RDB/west bank, south of Goulds Rd. bridge]

Photos 8/28/00
#15+#16 1715 ③ CC-SL-Ø2 (SOIL) - Cross Creek SE of J.P. (SW of treatment plant)
CC-SD-Ø2 (SED) [LDB/NW bank, SE of Goulds Rd./entrance to J.P.]
CC-WA-Ø2 (WATER)

Photos 8/28/00
#17+#18 1800 ④ CC-SL-Ø3 (SOIL) - Cross Creek at Goulds Rd. bridge (Scott
CC-SD-Ø3 (SED) Feather Rd ~~intersection~~ (Gator sign) / CR 74 intersection)
CC-WA-Ø3 (WATER) [LDB/SW bank, under Goulds Rd. bridge]

Photos 8/28/00
#19-21 1840 ⑤ CC-SL-Ø4 (SOIL) - Cross Creek at Goulds Rd. bridge (west of
CC-SD-Ø4 (SED) blue, ~~welding plant buildings~~ Flesher Auto Salvage - opp. side of creek)
CC-WA-Ø4 (WATER) [RDB/west bank, south of Goulds Rd. bridge]

END - 1910



Quadrangle Location

Ecology and Environment, Inc.
Region 5 - Superfund Technical Assessment and Response Team
6777 Engle Road, Suite N
Middleburg Heights, Ohio 44130

TITLE:	SAMPLE ~~Site~~ Location Map (8/28 - 8/29/00)	FIGURE:	2-1
SITE:	Jefferson Processing Site	SCALE:	1:24,000
CITY:	Mingo Junction STATE: Ohio	TDD:	S05-9903-008
SOURCE:	USGS Topographic Map 7.5' Series Steubenville West Quadrangle Ohio-West Virginia	DATE:	1968
		REVISED:	1985